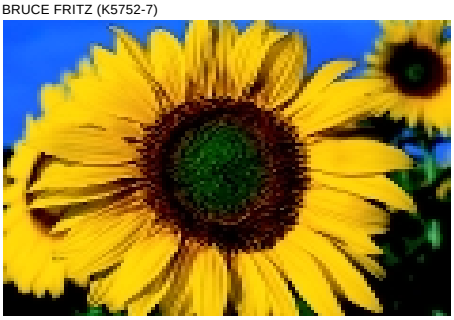
BRUCE FRITZ (K5752-7)



Protecting U.S. Sunflowers Against Broomrape

So far, U.S. sunflower growers have not been plagued by broomrape. But just in case this exotic weed should defy quarantine efforts and enter the country, researchers are searching for sources of resistance that could provide protection.

Broomrape, *Orobanche cumana,* is a parasitic plant with no capacity for making chlorophyll on its own. So it steals nourishment from sunflower roots, stunting or killing the plants. It now infests sunflower crops in China and countries bordering the Mediterranean and Black Seas.

International researchers try to develop new sunflower lines with resistance genes to keep up with the evolution of new broomrape races. But ARS scientists working with colleagues at the Instituto de Agricultura Sostenible in Córdoba, Spain, have taken that defense a step further. They have found a way to use interspecific hybridization—that is, crosses between cultivated sunflowers and distant relatives that were difficult to impossible to make, until now. Some of these improbable crosses have proved to be not just resistant—but immune—to broomrape race F, the newest one.

This work was spurred by losses of 40 to 50 percent of Spanish sunflower crops to broomrape races E and F in the early 1990s. Research collaboration has led to seven new, resistant sunflower germplasms derived by crossing USDA lines with race E-resistant ones from Russia, Romania, and Turkey. New conventional hybrids from those lines now growing in Spain are suffering only 10- to 15-percent yield losses. *Chao C. Jan and Jerry F. Miller, USDA-ARS Red River Valley Agricultural Research Center, Fargo, North Dakota; phone (701) 239-1319, (701)239-1321, e-mail janc@fargo.ars.usda.gov millerj@fargo.ars.usda.gov.*

Blackeye Peas Go Green

Plant breeders recently released the first-ever blackeye-type southern pea that shows the green cotyledon seed trait. Peas of the new variety retain their fresh green color, even when harvested dry. Green Dixie Blackeye was released for use by both home gardeners and the dry-pack bean industry. The peas can be harvested fresh for immediate consumption or storage in home freezers, as well as fully dry—for storage or sale as an attractive dry pack.

Green Dixie Blackeye is the result of 10 years of cross-breeding of the large, cream-type Bettergreen variety with the popular and high-yielding Bettergro Blackeye. It produces dry pods in around 70 days, each holding about 14 peas that are larger than those of Bettergro Blackeye. And it outyielded the top-producing Arkansas Blackeye #1.

Dry peas can be restored to fresh-harvest seed size and color by soaking in water for 2 hours and blanching in boiling water for 3 minutes. Seed of Green Dixie Blackeye has been offered to over 240 commercial seed growers and food-processing companies, so an adequate seed supply should be available by 2002. *Richard L. Fery, USDA-ARS U.S. Vegetable Laboratory, Charleston, South Carolina; phone (843) 556-0840, e-mail rfery@awod.com.*

Can Copper Save the Day for Catfish Eggs?

Fish farmers routinely apply a chemical called copper sulfate to catfish-rearing ponds to curb excessive growth of oxygen-hungry algae. Less algal growth means healthier fish and lower production costs. Now researchers are wondering if the compound might also cut down on waterborne fungi that destroy catfish eggs before they can hatch into small fry.

Since the 1980s, fish farmers have had only one officially approved therapeutic drug—formalin—available to protect their eggs. Copper sulfate would be a less costly alternative that's also easier to apply and less smelly. Cooperative research with Phelps Dodge Refining Corp., El Paso, Texas, will attempt to find out if copper sulfate can protect channel catfish eggs without harming young hatchlings. Approval is already being sought for its use in treating a parasitic disease of fish called ichthyopthiriasis. *Billy R. Griffin, USDA-ARS Harry K. Dupree Stuttgart National Aquaculture Research Center, Stuttgart, Arkansas; phone (870) 673-4483, e-mail bgriffin@spa.ars.usda.gov.*

Rice Is Nice—for Doughnut-making

Modified rice starch, rice flour, and other rice-based ingredients, when incorporated into doughnut dough, reduce the absorption of frying oil by up to 70 percent. Mixed with wheat flour, the rice ingredients make a dough that is more tender, consistent, and moist, and they reduce oil uptake. Though less oily, the doughnuts made from the experimental formulations compare favorably in taste, texture, and other sensory properties with traditional cake doughnuts.

Researchers have tried many different combinations of wheat and rice ingredients, searching for the best ratio for reducing oil absorption without sacrificing consumer appeal. Tests of the finished doughnuts showed all-wheat doughnuts to have 24 to 26 grams of oil, while some wheat-rice ones had as little as 8 grams. *Frederick Shih, USDA-ARS Food Processing and Sensory Quality Research Unit, New Orleans, Louisiana; phone (504) 286-4354, e-mail fshih@nola.srrc.usda.gov.*